REMARKS

Claims 1-16 remain in the present application.

Claim 1 was objected to for the formality, that in line 3, claim 1 stated "the roll sheet" instead of "the roll shell."

Claims 1-3, 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schiel, U.S. Patent No. 5,487,715 ("Shiel I") in view of Shiel, U.S. Patent No. 5,800,324 ("Shiel II").

Claims 4, 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schiel I and Schiel II as applied to claim 1, and further in view of Kusters et al., U.S. Patent No. 3,046,637 ("Kusters").

Claims 6-10 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiel I in view of Sheil II and Kusters as applied to claim 4, and further in view of Hornbostel, U.S. Patent No. 3,098,284 ("Hornbostel").

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiel I in view of Shiel II and Kusters and Hornbostel as applied to claim 10, and further in view of Korsch, U.S. Patent No. 3,470,948 ("Korsch").

Claim 1 has now been amended to meet the aforementioned formality objection. New claims 17 and 18 have been added for the Office's consideration. No new matter has been added. Reconsideration of the application in view of the below remarks is respectfully requested.

Objection to Claim 1

Claim 1 was objected to for the formality, that in line 3, claim 1 stated "the roll sheet" instead of "the roll shell."

Applicants have now amended "the roll sheet" in line three of claim to read "the roll shell" as suggested by the Office.

Reconsideration of the objection to claim 1 in light of the aforementioned objection is respectfully requested.

Rejection of Claims 1-3, 13 and 14 under 35 U.S.C. § 103(a)

Claims 1-3, 13 and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiel I in view of Shiel II.

Shiel I describes a roll for the production of or treatment of fiber webs which includes a fixed central axis 1, and a roll shell 2 adapted to rotate around the fixed axis. Damping chambers 10 are disposed in two longitudinal slits of grooves 9 in the central axis 1. The damping chamber 10 is divided by a rectangular tube 16 having a capillary bundle extending thereinto. The capillary bundle comprises two boundary walls 17 and band-shaped lamellae 18 arranged therebetween. The lamellae 18 are secured to between the boundary walls 17 by screws or rivets 19 with spacers 20. During operation, the damping chamber 10 is partially filled with a gas bubble 22 which elastically compensates for volume changes in the combined system of the liquid-filled half-annular pressure chamber 7 and the damping chamber 10 caused by vertical relative movement between central axis 1 and the roll shell 2. The flow of liquid in the slits or gaps between the lamellae 18 that occur during such volume changes cause the desired damping. See Shiel I, column 1, lines 40-44, column 2, lines 20-25, 37-55, and Figs 1 and 2a.

Schiel II describes a roll with a vibration damper. The roll has a stationary central shaft 1 and an annular roll shell 2 which rotates around the central shaft 1. A feed channel 28 for pressure fluid extends in the longitudinal direction through the center of the central shaft 1. Hydraulic pressure fluid passes, via several radial holes 33 in the shaft, into several cylindrical chambers or pressure chambers 32 arranged in a row along the shaft in one plane. Within each cylindrical chamber 32 there is a support element 31, displaceable in the radial direction. The presence of elevated pressure in the cylindrical chambers 32 presses the

support elements 31 against the inner surface of the roll shell 2 which is then pressed against a backing roll 2. The pressure of role 3 causes a controlled sagging of the roll shell 2. See Schiel II, column 1, lines 4-6, column 3, line 48 to column 4, line 2, and Figs. 2 and 3.

Claim 1 of the present application recites "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded."

Applicants respectfully submit that none of Schiel I or Schiel II teach or suggest "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application. The Office stated in the Office Action that Schiel I describes an elastic element. The Office has specifically stated that:

> "**[W]herein in the at least one pressure chamber (12) there is provided an elastic element (18″)** (damping element 10 is an elastic element defined by rectangular tube 16) **which unrestrictedly communicates with the liquid** (as shown in Figure 1, the damping chamber 10 unrestrictedly communicates with the liquid."

See the Office Action dated June 10, 2011, Detailed Action, page 3, lines 2-5. Applicants respectfully submit that the aforementioned statement of the Office is inaccurate. The damping chamber 10 of Shiel I is best shown in Fig. 2a:

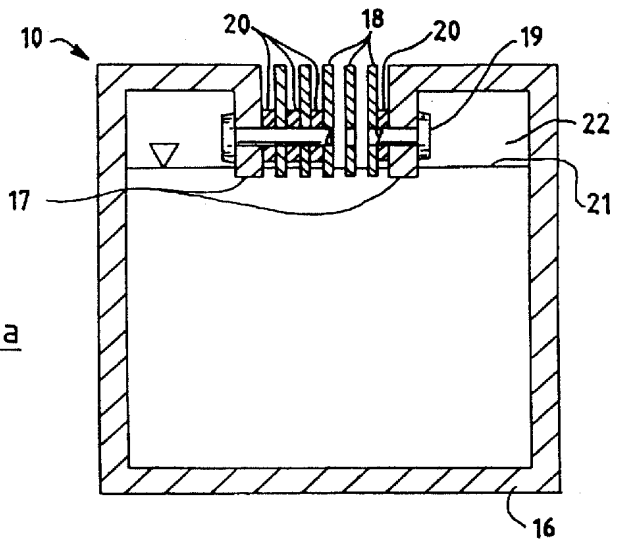

Fig. 2a

Applicants respectfully submit that none of the aforementioned elements of damping chamber 10 are elastic. Each of rectangular tube/tube walls 16, boundary walls 17, lamellae 18, screws/rivets 19 and spacers 20 are solid. The only "elasticity" involved with damping chamber 10 is gas bubble 22 which Schiel I describes as "elastically compensating" for volume changes. See Schiel I, column 2, lines 47-55. Shiel I therefore does not disclose an "elastic element" recited by claim 1 of the present application. Even if the Office would consider the gas bubble 22 to be the required elastic element (18'), said gas bubble 22 does not unrestrictedly communicate with the liquid constriction-free as is required by claim 1 of the present application. In contrast, Schiel I describes that the desired damping results from the flow of liquid in the slits or gaps between the lamellae 18 that occur during volume changes. See Schiel I, column 2, lines 52-55. The lamellae 18 are specifically designed to limit the flow of water between the damping element 10 and the liquid pressure chamber 7 based on capillary characteristic K, which capillary characteristic K "must lie between about $2.5X10^7$ m^{-2} and about $2.5X10^8$ m^{-2} based on a specific formula. See Shiel I, column 1, lines 55-59. Based on said formula, the flow cross-sectional areas in the capillary section are therefore preferably chosen in Schiel I to be between about 0.003 m^2/m and about 0.02 m^2/m (particularly preferred between about 0.005 m^2/m and about 0.02 m^2/m)." See Schiel I, column 4, lines 28-32. Air bubble 22 therefore does not unrestrictedly communicate with the liquid constriction-free as is required by claim 1 of the present application. Schiel II does not cure this defect. In contrast, Applicants respectfully submit that a person of ordinary skill in

the art would never have combined, and could not in fact have combined, any elements of Schiel I with Schiel II because two different types of rolls are involved with two different principals and requirements of vibration damping. Schiel I describes a roll with a liquid filled half-annular pressure chamber 7 and a half-annular back-flow chamber 8 between which liquid can be passed via inlet channels 5 and discharge channels 6. See Schiel I, column 2, lines 14-20 and Fig. 1. This roll in Schiel I is a so-called "floating roll." Schiel II, however, describes not a floating roll as in Schiel I and as in the present application, but much rather a so-called "piston-supported roll" in which:

> "Hydraulic pressure fluid passes, via several radial holes 33 in the shaft, into several cylindrical chambers or pressure chambers 32 arranged in a row along the shaft in one plane, typically the press plane against the pressure applied to the roll. Within each cylindrical chamber 32 there is a support element 31, which is, for instance, in the form of a piston."
>
> See Schiel II, column 3, lines 54-59.

In the piston-supported roll of Schiel II, the annular space located between the roll shell 21 and the central shaft 1 filled with not with liquid, but with air. See Schiel II, column 4, line 66 to column 5, line 4. The only liquid in Schiel II is the hydraulic liquid located in the arrangement including the radial hole(s) 33, pressure chamber(s) 32, support element 31/piston, feed channel 28 and piston 22 arranged in transverse hole 29. See Schiel II, column 3, lines 54-59, and column 5, lines 5-10. In the Office Action, the Office appears to suggest: 1) replacing the compressible medium of damping chamber 10 (i.e., air bubble 22) of Schiel I with the spring element 21 of Schiel II or; 2) replacing the entire damping chamber 10 with the spring element 21 of Schiel II. See Office Action dated June 10, 2011, Detailed Action, page 3, lines 17 to page 4, line 2, page 5, lines 3-5. With respect to 1), replacing the compressible medium of damping chamber 10 (i.e., air bubble 22) of Schiel I with the spring element 21 of Schiel II, as set forth with respect to Schiel I above, the air bubble 22 of Schiel I does not unrestrictedly communicate with the liquid constriction-free as is required by claim 1 of the present application due to the flow-limiting effect of lamellae 18.

A substitution of the air bubble 22 in damping chamber 10 of Schiel I with the spring element 21 of Kusters would therefore also not unrestrictedly communicate with the liquid constriction-free. With respect to 2), replacing the entire damping chamber 10 with the spring element 21 of Schiel II, Applicants respectfully submit that such a substitution would not result in a damping of as taught in Shiel I (based on capillary characteristic K as set forth above) absent considerable additional modification of the Schiel I roll (such as, for example, adding of traverse hole 29, compression spring 21/piston 22 in feed channel 28, radial holes 33, pressure chambers 32, support element 31, and arranging said elements so that damping is achieved). This is due to the fact that two different rolls are involved, the Schiel I floating roll being filled with a liquid, the Schiel II piston-supported roll being filled with air. Applicants therefore respectfully submit that, because the floating roll of Schiel I is of an entirely type and design than the piston-supported roll of Schiel II, a person of ordinary skill in the art would never have combined Schiel I with Schiel II. Said proposed modification or combination of the prior art would necessarily change the entire principle of operation of Schiel I. The teachings of Scheil I and Schiel II are therefore not sufficient to render the claim 1 prima facie obvious. See MPEP 2143.01(VI) and *In re Ratti*, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Applicants further respectfully submit that even if, contrary to the statements set forth above, a person of ordinary skill in the art did combine Schiel I with Schiel II, that Schiel II still would not teach or suggest "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as is recited in claim 1 of the present application. In contrast, the only possible elastic element described in Schiel II is compression spring 21 which, together with piston 22 acts against the fluid pressure in transverse hole 29 of feed channel 28. See Schiel II, column 5, lines 5-10 and Fig. 2. Claim 1 of the present application requires, however, that the elastic element "unrestrictedly communicate" with "the liquid." It is furthermore clear from claim 1 that "the liquid" being referred to is located in pressure chamber (12). It is also clear from claim 1 that pressure chamber (12) is located between the carrier (3) and the roll shell (4). In Schiel II,

however, no liquid is located in the annular space (located between the roll shell 21 and the central shaft 1), only air.

Because each of Schiel I and Schiel II are missing at least the features of "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application, it is respectfully submitted that any combination of Schiel I and Schiel II, to the extent proper, could not render obvious claim 1 or any of its dependent claims 2-3, 13 and 14.

For at least the above reasons, reconsideration and withdrawal of the rejection to claims 1-3, 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over Schiel I in view of Schiel II is respectfully requested.

Rejection of Claims 4, 5 and 11 under 35 U.S.C. § 103(a)

Claims 4, 5 and 11 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Schiel I and Schiel II as applied to claim 1 above, and further in view of Kusters.

Schiel I and Schiel II were described above.

Kusters describes a roller for the pressure treatment of a material in web form where the roller has a core 2 rotating with the hollow cylinder 1, the gap between the core 2 and the hollow cylinder 1 being separated into chambers formed by pockets containing tubes 5 of resilient material adjacent to one another and arranged parallel to the axis of the roller. The tubes are filled with liquid or gas and are connected to a source of pressure through a distribution device which as the roller rotates successively puts the tubes 5 in the part 9 of the roller in the vicinity of the co-acting surface 3 into communication with the source of pressure whilst cutting off the pressure from the tubes in the remaining part 19 of the roller. See Kusters, column 1, lines 11-12 and lines 50-61, column 2, lines 24-26, 41-47, and lines 62-63.

It is respectfully submitted that each of claims 4, 5 and 11 properly depend from independent claim 1. As stated above, Schiel I and Schiel II cannot be combined to teach or suggest at least the features "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a

liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application. Kusters does not cure this defect. In contrast, the Applicants respectfully submit that a person of ordinary skill in the art would also not have combined either of Schiel I and/or Schiel II with Kusters. Firstly, Kusters describes a third type of roll where the core rotates with the hollow cylinder. See Kusters, column 1, lines 50-51, column 2, lines 24-26. The Kusters roller is therefore of an entirely different type and design than the floating roll of Schiel I and of the present invention. Secondly, Kusters does not attempt to solve the problem of the present invention, that being to dampen vibrations. In fact, Kusters does not even mention vibrations or the damping thereof at all. Kusters much rather teaches increasing the pressure in part 9 of the roller as it comes in the vicinity of the co-acting surface 3. See Kusters, column 2, lines 41-47 and Fig. 1. Thirdly, the fact that Kusters describes an entirely different type of roller designed to solve an entirely different problem has resulted in entirely different design elements. For example, the tubes 5 in Kusters are specifically adapted to be connected to a source of pressure through pressure distributing means which changes the pressure in the tubes 5 as the Kusters roller rotates. The tubes 5 therefore increase in pressure in the vicinity of the co-acting surface 3 while decreasing in pressure in other areas. See Kusters, column 1, lines 55-61 and column 2, lines 41-47 and Fig. 1. This constantly changing pressure is required in Kusters because tubes 5 exert *pressure* by being in *direct contact* with the *working roller periphery 1*. See Kusters, Figs. 1-3. The tubes 5 of Kusters are not designed to dampen vibrations by acting *indirectly* on the roll shell 4 via a *liquid* as in the present application (as stated above, Kusters nowhere mentions vibrations or the dampening of vibrations). Tubes 5 of Kusters are not, therefore, an "elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application. Applicants lastly submit that the present application does not require or desire a constantly changing-pressure in the elastic element 18′ of the present invention because the elastic element 18′ does not rotate at all. Applicants respectfully represent that Kusters must be considered in its entirety, and that the use of the aforementioned tubes 5 with their constantly-changing pressure and the fact that a different type of roll is involved to solve an entirely different problem, teaches away from the combination of Kusters with either of Schiel I and/or Schiel II. See MPEP 2141.02(VI).

Applicants further represent that simply substituting the aforementioned tubes 5 of Kusters for the damping chambers 10 of Shiel I would change the principle of operation of the floating roll of Shiel I (based on capillary characteristic K) such that the teachings of the references are not sufficient to even render the claims prima facie obvious. See MPEP 2143.01(VI) and *In re Ratti* In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959).

Because Schiel I, Schiel II and Kusters cannot be combined to teach or suggest the features of "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application, it is respectfully submitted that any combination of Schiel I, Schiel II and Kusters, to the extent proper, could not render obvious claim 1 or any of its dependent claims 4, 5 and 11.

For at least the above reasons, reconsideration and withdrawal of the rejection to claims 4, 5 and 11 under 35 U.S.C. § 103(a) as being unpatentable Schiel I and Schiel II as applied to claim 1 above, and further in view of Kusters is respectfully requested.

Rejection of Claims 6-10 and 15-16 under 35 U.S.C. § 103(a)

Claims 6-10 and 15-16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiel I in view of Shiel II and Kusters as applied to claim 4, and further in view of Hornbostel.

Schiel I, Schiel II and Kusters were described above.

Hornbostel describes a structure for a roll 21 whose axis is subject to deflection in response to a load. The roll 21 is mounted with conventional allochiral heads and stub shafts 22, 23 rotatably carried in bearings 24, 25. See Hornbostel, column 1, lines 8-9, column 3, lines 66-70 and Fig. 3.

It is respectfully submitted that each of claims 6-10 and 15-16 properly depend from independent claim 1. As stated above, Schiel I, Schiel II and/or Kusters cannot be combined to teach or suggest at least the features "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and

is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application. The Office Action states that air as described in Hornbostel can be substituted into the Kusters tubes. See the Office Action dated June 10, 2011, Detailed Action, page 6, lines 7-8. However, even *if* such a combination were made, Kusters in its entirety would still teach away from its combination with either of Schiel I and/or Schiel II as well as change the principle of operation of the floating roll of Schiel I (based on capillary characteristic K) such that the teachings of the references are not sufficient to even render the claims prima facie obvious as set forth above.

Because Schiel I, Schiel II, Kusters and/or Hornbostel cannot be combined to teach or suggest the features of "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application, it is respectfully submitted that any combination of Schiel I, Schiel II, Kusters and Hornbostel, to the extent proper, could not render obvious claim 1 or any of its dependent claims 6-10 and 15-16.

For at least the above reasons, reconsideration and withdrawal of the rejection to claims 6-10 and 15-16 under 35 U.S.C. § 103(a) as being unpatentable over Schiel I in view of Schiel II and Kusters as applied to claim 4, and further in view of Hornbostel is respectfully requested.

Rejection of Claim 12 under 35 U.S.C. § 103(a)

Claim 12 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Shiel I in view of Shiel II and Kusters and Hornbostel as applied to claim 10, and further in view of Korsch, U.S. Patent No. 3,470,948 ("Korsch").

Schiel I, Schiel II, Kusters and Hornbostel were described above.

Korsch describes a roller structure comprising a roller body 3 and a roller shaft 4 eccentrically located within the roller body in a spaced relationship thereto while inflatable means are located between the roller body and roller shaft. The roller body 3 and roller shaft 4 are coupled to each other so as to rotate at the same speed. See Korsch, column 1, lines 13-27, column 2, lines 20-21, and column 4, lines 33-36.

It is respectfully submitted that claims 12 properly depends from independent claim 1. As stated above, Schiel I, Schiel II, Kusters and/or Hornbostel cannot be combined to teach or suggest at least the features "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application. Korsch does not cure this defect. Korsch merely describes a roller structure comprising a roller body 3 and a roller shaft 4 eccentrically located within the roller body in a spaced relationship thereto while inflatable means are located between the roller body and roller shaft. The roller body 3 and roller shaft 4 are coupled to each other so as to rotate at the same speed. See Korsch, column 1, lines 13-27, column 2, lines 20-21, and column 4, lines 33-36.

Because Schiel I, Schiel II, Kusters, Hornbostel and/or Korsch cannot be combined to teach or suggest the features of "a roll (100) for pressure treatment of material bands," "wherein in the at least one pressure chamber (12) there is provided an elastic element (18′) which unrestrictedly communicates with the liquid constriction-free and is compressible when a liquid pressure required for producing the hydraulic supporting force is exceeded" as recited in claim 1 of the present application, it is respectfully submitted that any combination of Schiel I, Schiel II, Kusters, Hornbostel and Korsch, to the extent proper, could not render obvious claim 1 or its dependent claim 12.

For at least the above reasons, reconsideration and withdrawal of the rejection to claim 12 under 35 U.S.C. § 103(a) as being unpatentable over Schiel I in view of Schiel II and Kusters and Hornbostel as applied to claim 10, and further in view of Korsch is respectfully requested.

New Claims

New independent claims 17 and 18 have been added.

New independent claim 17 is based on independent claim 1 with the additional limitations that the roll comprises "an annular gap disposed between an inner lateral (7) surface of the roll shell (4) an outer lateral surface (8) of the carrier (3)" and that "two mutually opposite longitudinal sealing arrangements (10, 11) configured to divide the annular

gap (9) into at least one pressure chamber (12) and at least one leakage chamber (13)." Support for the additional limitations is set forth, for example, on page 6, lines 22-28 and Fig. 1 of the application as originally filed in the PCT.

New independent claim 18 is based on new independent claim 17 with the additional limitation, that "at least one elastic element [is] disposed … in the at least one leakage chamber (13)." Support for the additional limitation is set forth, for example, on page 3, lines 18-21 and Fig. 1 of the application as originally filed in the PCT.

Applicants submit that new claims 17 and 18 are patentable for the same reasons as independent claim 1 is.

CONCLUSION

In view of the above amendment, Applicants believe the pending application is in condition for allowance.

It is believed that no fee is required for this submission. Should the U.S. Patent and Trademark Office determine that additional fees are owed or that any refund is owed for this application, the Commissioner is hereby authorized and requested to charge the required fee(s) and/or credit the refund(s) owed to our Deposit Account No. 50-5256.

Dated: August 2, 2011

Respectfully submitted,

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